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WEATHER, SOIL, AND VEGETATION IN THE CASPIAN SEA, KAZAKHSTAN, AND TYAN'-SHAN' MOUNTAIN REGIONS

Caspian Sea Region

The region around the Caspian Sea is predominantly desert. During the winter it is covered with snow; in the summer it is hot, dry, and dusty.

The Caspian Sea does not exert a decisive influence on the climate of the region. Its moderating influence is felt only along the shore, and there mainly in winter, in the form of a shortened cold period.

The warm period in the Caspian Sea area lasts from 230 to 265 days. The vegetation period (the period with an average temperature above 10 degrees) lasts up to 170 days. The maximum temperature in Astrakhan' is 40 degrees, in Gur'yev 41 degrees; minimum temperature in Astrakhan' is 33 degrees below zero, in Gur'yev 38 degrees below zero. In Gur'yev, therefore, the range between extreme temperatures is as great as 79 degrees.

The least precipitation falls on the northern shore of the Caspian Sea, where 175 millimeters is the annual average. Throughout the entire Caspian Sea area, average annual precipitation amounts to 200 millimeters, 150 millimeters of which fall during the warm period.

The soils of the Caspian Sea area are predominantly brown soils or gray desert soils. The brown soils occur in mixture with alkaline and saline soils.

Desert halophytic plants are important in the ground cover of the Caspian Sea region. While wormwood predominates generally, saltwort predominates in the undrained depressions and immediately along the seacoast. Some places are completely devoid of vegetation. Where sandy soils occur, ground cover is made up mainly of white wormwood (Artemisia maritima, Artemisia astrachanica). Artemisia arenaria predominates in sectors which have been more weathered. In places where the sand is hillocky, clumps of xerophytic sem.brushwood are predominant. Couch grass and club grass meadows have developed in depressions flooded for longer periods of time by fresh river water and in the flood plains of rivers.

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Kazakhstan

In general, the following main zones are distinguishable in the flatland part of Kazakhstan: forest steppe, steppe, semidesert, and desert.

The steppe zone includes territory where vegetation consists of perennial xerophytic grasses; these are for the most part such grasses as feather grass and Festuca sulcata. The desert zone includes territory where xerophytic scrub or semiscrub growth predominates; examples are Salsola laricifolia, gray wormwood (Artemisia terrae albae), and Anabasis salsa. The semidesert zone is a transitional zone between steppe and desert zones; therefore, its vegetation consists of a mixture or combination of steppe and desert vegetation types. The same is true of the forest steppe zone, where trees grow amid steppe forms of vegetation.

In the mountainous part of Kazakhstan, three main types of vegetational zonation re distinguished: Altay, northern Tyan'-Shan', and western Tyan-' Shan'.

The Altay type of zonation is characterized by a clearly expressed line below which lies a dense coniferous forest zone and above which occurs a tundra zone covered with mountain moss and lichens.

The northern Tyan'-Shan' type of zonation is that found in the Dzhungarskiy Alatau, Ketmenskiy, and Zailiyskiy Alatau mountains. There, the coniferous forest zone is not as dense as in the Altay, since it has been partially cut down and now appears as a forest-meadow or forest-meadow-steppe zone, where groves of Tyan'-Shan spruce (Picea schrenkiana) alternate with large meadow and steppe areas. The alpine zone is not tundra but is lightly grass-covered and highly colorful meadowland, steppeland, and land overgrown with Sobresia capilliformis.

The western Tyan'-Shan' type of vegetational zonation is characterized by almost total absence of coniferous forest growth and by light development of meadow vegetation.

Tyan'-Shan' Mountain Region

The Tyan'-Shan, extending from the borders of Kazakhstan into and through Kirgiz SSR, is understood by most geographers to include that part of the Central Asiatic mountain area which lies between the Fergana Valley and the valleys of the Ili and Tarim rivers. This vast territory is an orographically complex area, with various parts at varying elevations above sea level.

The natural geomorphological zones of the Tyan'-Shan', distinguishable by soil and climatic conditions, correspond generally with the economic usage zones of the territory.

The following zones may be distinguished according to this criterion: the irrigated agricultural zone, the unirrigated agricultural zone, the mountain forest zone, and the mountain meadow (pasture) zone.

The irrigated agricultural zone in the Tyan'-Shan' occupies the river valleys and to some extent the slopes of the lower foothills.

The unirrigated agricultural zone covers, mostly, the foothills and plateau-like heights of the lower mountains, but partly also the slopes of the medium-height mountains.

The mountain forest zone in the Tyan'-Shan' covers an insignificant area in comparison with similar zones of other Soviet mountain systems. The lack of timber is explained as a result of historical events in Central Asia. The present-day timber supply in the Tyan'-Shan' is limited to comparatively light stands of isolated forest massifs. Uncontrolled cutting of the mountain forests during the last decade has had its effect on the rivers in producing both reduced discharges from them and nonuniform discharges into them. One result has been the occurrence of violent floods.

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